INTERNATIONAL STANDARD

ISO 27668-1

Second edition
2016-10-15

Gel ink ball pens and refills —

Part 1: General use

Stylos à bille à encre gel et recharges —

Partie 1: Utilisation générale

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ISO 27668-1:2016
https://standards.iteh.ai/catalog/standards/sist/6e498d39-2f7e-49a9-98a1-a258c2bdad11/iso-27668-1-2016

Reference number
ISO 27668-1:2016(E)

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ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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The committee responsible for this document is ISO/TC 10, *Technical product documentation*.

This second edition cancels and replaces the first edition (ISO 27668-1:2009), of which it constitutes a minor revision.

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ISO 27668 consists of the following parts, under the general title *Gel ink ball pens and refills*:

— *Part 1: General use*

— *Part 2: Documentary use (DOC)*

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Introduction

This part of ISO 27668 is applicable to gel ink ball pens for general use.

ISO 27668-2 is applicable to gel ink ball pens for documentary use.

For documentary use, some requirements, in addition to those for general use, are necessary

a) to assure the legibility of lettering, and

b) for the handling and storage of documents over long periods of time (these requirements are often discussed with the archivist).

An example of documentary use is the preparation of documents that are required as evidence.

Furthermore, pens which meet the requirements for documentary use produce lines which are more resistant to modification (e.g. attempts to falsify a document) than those for general use.

The International Organization for Standardization (ISO) draws attention to the fact that it is claimed that compliance with this document may involve the use of a patent concerning aqueous gel ink-filled ballpoint pens.

The holder of this patent right has assured ISO that he is willing to negotiate licences under reasonable and non-discriminatory terms and conditions with applicants throughout the world. In this respect, the statement of the holder of this patent right is registered with ISO. Information may be obtained from:

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Mitsubishi Pencil Company Limited

Patent Administration Department, 5.23-37, Higashi-ohi

JP-Shinagawa, Tokyo 140-8537

Japan

oomorih@mpuni.co.jp

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Gel ink ball pens and refills —

Part 1:
General use

1 Scope

This part of ISO 27668 establishes minimum quality requirements for gel ink ball pens (refillable and non-refillable) and refills for general use.

Additional requirements for gel ink ball pens for documentary use are given in ISO 27668-2.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 105-A02, *Textiles — Tests for colour fastness — Part A02: Grey scale for assessing change in colour*

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ISO 105-B02, *Textiles — Tests for colour fastness — Part B02: Colour fastness to artificial light: Xenon arc fading lamp test*

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ISO 534, *Paper and board — Determination of thickness, density and specific volume*

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ISO 535, *Paper and board — Determination of water absorptiveness — Cobb method*

ISO 536, *Paper and board — Determination of grammage*

ISO 868, *Plastics and ebonite — Determination of indentation hardness by means of a durometer (Shore hardness)*

ISO 2144, *Paper, board and pulps — Determination of residue (ash) on ignition at 900 degrees C*

ISO 5627, *Paper and board — Determination of smoothness (Bekk method)*

ISO 6588-1, *Paper, board and pulps — Determination of pH of aqueous extracts — Part 1: Cold extraction*

ISO 6588-2, *Paper, board and pulps — Determination of pH of aqueous extracts — Part 2: Hot extraction*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
pen
writing instrument equipped with a feeding system which deposits a writing fluid on a surface

Note 1 to entry: It is available in refillable or non-refillable (disposable) form.

3.2
ball pen
pen with a writing fluid feeding system based on a rotatable ball writing tip integrated either within the pen itself or within a refill

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3.3
gel ink ball pen
ball pen which deposits a writing fluid whose viscosity decreases markedly with rotation of the ball when writing and increases back to or near to the original viscosity in non-movement, i.e. when not writing

3.4
cartridge
disposable container for the writing fluid, which is detached when empty and replaced by a (new) full container

Note 1 to entry: Adapted from ISO 9175-1:1988, 3.4.

3.5
refill
identifiable assembly of components, usually removable from a complete pen, with which it is possible to write independently of the complete pen, but which lacks either characteristics or components which would make it suitable for use as a pen

3.6
write test machine
device for mechanically generating a line with a pen or refill on a writing surface and which can be adjusted for

— a writing angle between 60° and 90°,

— writing load from 0,1 N to 5 N,

— writing speed between 1 m/min and 10 m/min, and

— line pitch between 1 mm and 5 mm,

with a continuous spiral line (100 mm circumference) and a fixed or rotating motion along the longitudinal axis of the pen or refill; the writing surface is to be placed on a polished stainless steel plate.

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[SOURCE: ISO 12756:1998, 3.7]

3.7 Test parameters

3.7.1 Resistance to chemical influences including water

3.7.1.1
water resistance
ability of a line written on specified testing paper to remain visible after immersion in distilled or de-ionized water for a specified length of time

3.7.1.2
ethanol resistance
ability of a line written on specified testing paper to remain visible after immersion in a specified ethanol solution for a specified length of time

3.7.1.3
hydrochloric acid resistance
ability of a line written on specified testing paper to remain visible after immersion in a specified hydrochloric acid solution for a specified length of time

3.7.1.4
ammonium hydroxide resistance
ability of a line written on specified testing paper to remain visible after immersion in a specified ammonium hydroxide solution for a specified length of time

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3.7.1.5
bleaching resistance
ability of a line written on specified testing paper to remain visible after treatment in a specified bleaching solution for a specified length of time

3.7.2 Resistance to physical influences

3.7.2.1
erasure resistance
ability of a line written on specified testing paper to resist erasure using specified procedures with a specified eraser without altering the surface of the testing paper

3.7.2.2
light resistance
ability of a line written on specified testing paper to remain visible after exposure to specified light for a specified length of time

3.7.3 Other parameters

3.7.3.1
strike through
condition in which a writing fluid has penetrated through specified testing paper so as to appear on the opposite side of the paper from the written line

3.7.3.2
drying time
length of time required for a line drawn on specified testing paper to become non-smearing

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Note 1 to entry: The drying time test estimates the resistance to transference to skin and to superimposed paper, under specified conditions.

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3.7.3.3
reproducibility
ability of an original written line to be reproduced by a specified photocopier, microfilm processor or telefacsimile machine

3.7.3.4
shelf life
minimum expected storage life, measured from the date of manufacture, during which the product maintains its specified performance when stored under specified conditions, and during which the pen or refill is unused

3.7.3.5
cap-off time
length of time during which unused roller ball pen and gel ink ball pen maintain their writing ability when stored horizontally without their cap after writing

3.7.3.6
writing speed
rate of line generation

3.7.3.7
point load
vertical component of force applied to a writing tip during line generation

3.7.3.8
writing angle
included angle measured from the plane of the writing surface to the longitudinal axis of a pen or refill when in writing position

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